wounded by gunshot because the carcass was well within the boundaries of the nature center where firearms are prohibited. In addition, no evidence of gunshot wounds was discovered in the examination of the carcass. Secondly, internal examination revealed that the vertebral column, as well as several vertebral ribs on the left side, had been broken in the thoracic region. Such damage probably resulted from a single impact of great force from above, as by a hawk in a dive. It seems improbable that such localized heavy damage would have resulted had the kite been wounded and the encounter taken place on the ground. An alternate explanation, that the hawk was scavenging on a road-killed kite, is not feasible because the prey bird was discovered freshly killed across a drainage ditch and up a steep embankment from the nearest road.

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GOLDEN EAGLES SUCCESSFULLY BREEDING IN SUBADULT PLUMAGE

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In 1979 I observed a pair of breeding Golden Eagle (*Aquila chrysaetos*), in Carbon County, Wyoming, in which one bird was in subadult plumage. This pair successfully raised and fledged two young. I observed and photographed these birds periodically for seven weeks. The fact that eagles were breeding in subadult plumage is significant in that most eagles do so only under conditions which are unusually favorable or unfavorable (e.g., during heavy persecution). Other species of raptors breed at ages younger than usual when conditions are exceptionally good, either in extremely favorable years or areas; or when there are fewer than usual adults in a population leaving territories vacant (Newton 1979). In the Prairie Falcon (*Falco mexicanus*) it was observed that 9 percent of a population bred in subadult plumage (all female), and 8 out of 10 successfully fledged at least one offspring (Platt 1979 and pers. comm.).

In the European Sparrowhawk (*Accipiter nisus*), Goshawk (*Accipiter gentilis*), and Kestrel (*Falco tinnunculus*), the percentage of females breeding in subadult plumage was directly correlated with prey abundance and scarcity (Newton 1979, McGowen 1975, and Village 1979). Both sexes in pairs of Golden Eagles have been observed in immature plumage, and young have been raised in some instances (Sandman 1957, Bates 1976). In Scotland Golden Eagles, when both birds were in subadult plumage, have

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formed pairs, defined territories, and constructed nests with no young produced in most cases. This was in an area of high persecution with a small or nonexistent "floating" population of nonbreeding adults.

Bates (1976) observed successfully breeding pairs in Scotland in which he believed the male to be the subadult. Jollie (1947) reports that "the plumage achieved by the second molt may be called 'subadult' because I believe that I have observed birds breeding in this plumage and because it introduces the first feathers of the adult pattern." Assumption of adult plumage does not necessarily mean that an eagle is sexually mature and can breed though we usually assume it, i.e., Spanish Imperial Eagle (*Aquila heliaca*) (Brown 1976). I am unaware of any other published references to Golden Eagles successfully breeding in subadult plumage; however, this may be a more common phenomenon than is represented by the literature.

Michael Kochert (pers. comm.) of the Bureau of Land Management, Boise District, Idaho, reports that 12 Golden Eagles, one individual per pair, in 564 nesting attempts (2%) were subadults. They colormarked the birds according to size and behavioral observations (incubation, etc.) to distinguish between the sexes. He believes that the subadults were all males.

During 40 years of observations, Morlan Nelson (pers. comm.) noted subadults were approximately 1–2 percent of the breeding population. He estimates an average success rate of 80 percent for these birds. He observed more female immatures at nests but feels more studies are needed on differences in mature feathers between the male and female. There is a distinct difference in the moult. Males produce mature feathers a year or more earlier than females, according to Nelson.

I returned in 1980 to the same nest site in Wyoming, and there were two adult Golden Eagles occupying the nest. I have no direct information that they were the same birds.

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